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State of Utah
DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER
Executive Director

Division of Oil, Gas and Mining

JOHN R. BAZA
Division Director

September 3, 2008

TO: Internal File

THRU: Daron R. Haddock, Permit Supervisor

FROM: David Darby, Senior Environmental Scientist, Geohydrologist, PG

RE: Technical Field Visit, Installation of Crest Gages and Single Stage Samplers, UtahAmerican Energy, Inc., Lila Canyon C/007/0013

Attendees:

Jay Marshall, UtahAmerican Energy
Tom Suchoski, Hydrologic Design
Josh Suchoski, Hydrologic Design
Dave Darby, DOGM

Date & Time:

August 1, 2008 from 9:00 AM till 6:00 PM

PURPOSE:

The purpose of the visit was to observe the placement and installation of six crest gages and six single stage samplers in Little Park Wash and one of its tributary channels. Although Exhibit A required monitoring to be conducted during the first quarter of the year, road conditions did not allow access to the upper sites. When the road conditions improved for access, the elk and deer calving exclusionary period kicked in, which ran until July 15, 2008.

OBSERVATIONS:

On August 1, 2008 I met Jay Marshall, Josh Suchoski and Tom Suchoski at the old Horse Canyon Mine facilities. We planned to install crest gages and single stage samplers in the stream channel of Little Park Wash and one tributary, Dry Wash, as prescribed in the Stipulation for Dismissal document to the Horse Canyon Mine Mine Permit (C070013) Decision Package, Exhibit A.

1594 West North Temple, Suite 1210, PO Box 145801, Salt Lake City, UT 84114-5801
telephone (801) 538-5340 • facsimile (801) 359-3940 • TTY (801) 538-7458 • *www.ogm.utah.gov*

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Jay unloaded his UTV, and Josh and Tom unloaded an ATV. We drove the vehicles up the dry channel of Little Park Wash to an area near the western edge of the permit boundary. We searched for a site location to place the crest gage and sediment sampler. The channel narrowed and became steep as we moved to toward the permit boundary so we moved down the channel to a sight that is strait and wider. There we placed the first of gauging station. We spent the day installing another 5 stations. A map, accompanying this report, was prepared by Tom Suchoski, identifies the location of all the gauging stations.

A report by Hydrologic Design also accompanies this report that describes activities conducted by UtahAmerican and Hydrologic Design to address the stipulation for dismissal in the permit. The report describes installation of the rain gauges, Part 1 (a), installation of the crest gauges and Siphon samplers, Part 1(b). It also reports of the seep and spring investigation conducted by the Jay Marshall, Josh Suchoski and Tom Suchoski on April 11 and 12, 2008 in the escarpment between Lila Canyon to Williams Draw Fault line. Seeps were found the flow less than 0.01 gpm. Field parameters were taken. GPS locations were taken of the seeps and gauging stations and listed in Table 1 of the Hydrologic Design report.

RECOMMENDATIONS/CONCLUSIONS:

UtahAmerican has completed the hydrologic related requirements of the stipulations of Exhibit A. The Hydrologic Design report provides the details requested by the requirements of the mine permit.

cc: All Attendees
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Lila Canyon Mine

East Carbon, UTAH

Stipulation Response - Seep and Spring Inventory, Rain & Crest Gauges

Prepared For:

UtahAmerica Energy Inc.
794 C Canyon Road
East Carbon, UT 84520
435.888.4007 Tel

Prepared by:

Hydrologic Design Inc.
10969 Topview Road
South Jordan, Utah 84095
801.608.2414 Tel
801.576.9259 Fax

Contact:
Tom Suchoski

August 2008

INTRODUCTION:

On January 2, 2008 the DOGM required additional special stipulations on the prior approval of the Lila Canyon Permit. Stipulations 1 through 4 were on-going stipulation from the prior approval. Stipulations 5 through 9 were new stipulations. This report addresses the stipulations 5 (rain and crest gauges and siphon samplers) and 6 (seep and spring) .

The purpose of this study was to address these stipulations and to specifically:

- Described the installation of rain gauges within the Lila Canyon Mine Permit Area.
- Describe the installation of crest gauges and siphon samplers on selected streams.
- Describe the seep and spring inventory within the selected area and determine if the groundwater resources have been adequately characterized.

RAIN GAUGES

In accordance with stipulation #5, two rain gauges were installed within the Lila Canyon Mine Permit area. One is located to the south of the mine facilities area and one is located on top of the Book Cliffs in the Little Park Wash drainage area (near the IPA #2 well site). The locations of the rain gauges were determined by an Delorme Earthmate PN-20 GPS unit and are shown on Plate 1 and the coordinates and elevations are presented in Table 1. These rain gauges were tipping bucket type rain gauges with a data logger. The data are collected in 0.01" increments with a resolution of 0.01 inches per second. Readings are taken only when precipitation is recorded. The data are stored in the data logger memory until the data are downloaded. When the next sequence is started, the prior data are erased and overwritten.

CREST GAUGES AND SIPHON SAMPLERS

In accordance with stipulation #5, seven (7) sets of crest gauge and siphon sampler were installed on selected drainages within the Lila Canyon Mine Permit area. Crest Gauge 1 was installed on April 11, 2008 and Crest Gauges 2 - 7 were installed on August 1, 2008. The position of the sample sites were determined by either Mr. David Darby and Mr. James Smith, of the DOGM staff, in concurrence with the UEI representatives. Efforts were made to locate the sampling sites in a fairly

uniform section of channel and in a location where the upstream flows would not be affected by channel changes. This was generally possible in all locations except Crest Gauge 1 where the channel was meandering sharply. Once installed, the locations of the sampling sites were determined using an Delorme Earthmate PN-20 GPS unit. Plate 1 shows the location of these sites and Table 1 presents the coordinates and elevations.

The crest gauges were U.S.G.S. Type C, 4-foot crest gauges. These were attached to a 2-inch diameter steel pipe driven into the channel bottom.

The siphon samplers were standard, single-stage samplers and were located adjacent to the crest gauges. These samplers were secured to t-posts driven into the channel bottom. The sampling ports were secured to the t-post and pointed up-channel and the vents were secured to the vertical t-post.

SEEP AND SPRING INVENTORY

In accordance with stipulation #6, a seep and spring inventory was conducted of the area from the top of the Sunnyside coal seam of the Book Cliffs escarpment in a southwesterly direction to the Emery county Road (old tram road at 5750 foot elevation) from Lila Canyon near the proposed mine facilities to the Williams Draw Fault Line near the southern limits of the permit area. Plate 1 (attached) shows the location of the area that was covered by the seep and spring survey.

METHODS: On April 11 and 12, 2008, a spring and seep survey was conducted to address the special condition #5 as described above. The area of study was traversed on foot to determine any seep or spring locations. A team of three individuals consisting of Tom Suchoski, Josh Suchoski, and Jay Marshall walked the area at various elevations from just below the base of the coal seam, at mid slope, and along the bottom of the channel or toe of the slope. In this manner, the area was checked for any water occurrences.

Where water was identified, a GPS reading was taken to locate the site using a DeLorme Earthmate PN-20 GPS unit. An estimate of flow was determined and where sufficient water was available temperature, pH, and conductivity readings were taken. These measurements were taken with a Hanna combination meter, model HI98129.

The GPS data were exported from the DeLorme GPS units on the NAD 27 base in deg.-min. format. These values were then converted to State Plane

coordinates (feet) using the U.S. Army Corps of Engineers, CorpsCon program, version 6.0.1. The data were then plotted on the site area base map using AutoCAD.

RESULTS: Within the survey area, a series of 5 seeps were identified that were in addition to the seeps previously identified. All of these seeps were located within the Stinky Spring Canyon. Most occurrences were in close proximity to previously identified sites. It was difficult to tell whether these were separate occurrences or if they were different expressions of the same water.

Points JS-1 and JS-2 were separate occurrences. JS-1 was a wet spot high up on a cliff face and appeared to be the result of formation contact expression (i.e., sandstone layer overlying shale layer). JS-2 was located up the side canyon to Stinky Spring and was also a formation contact expression.

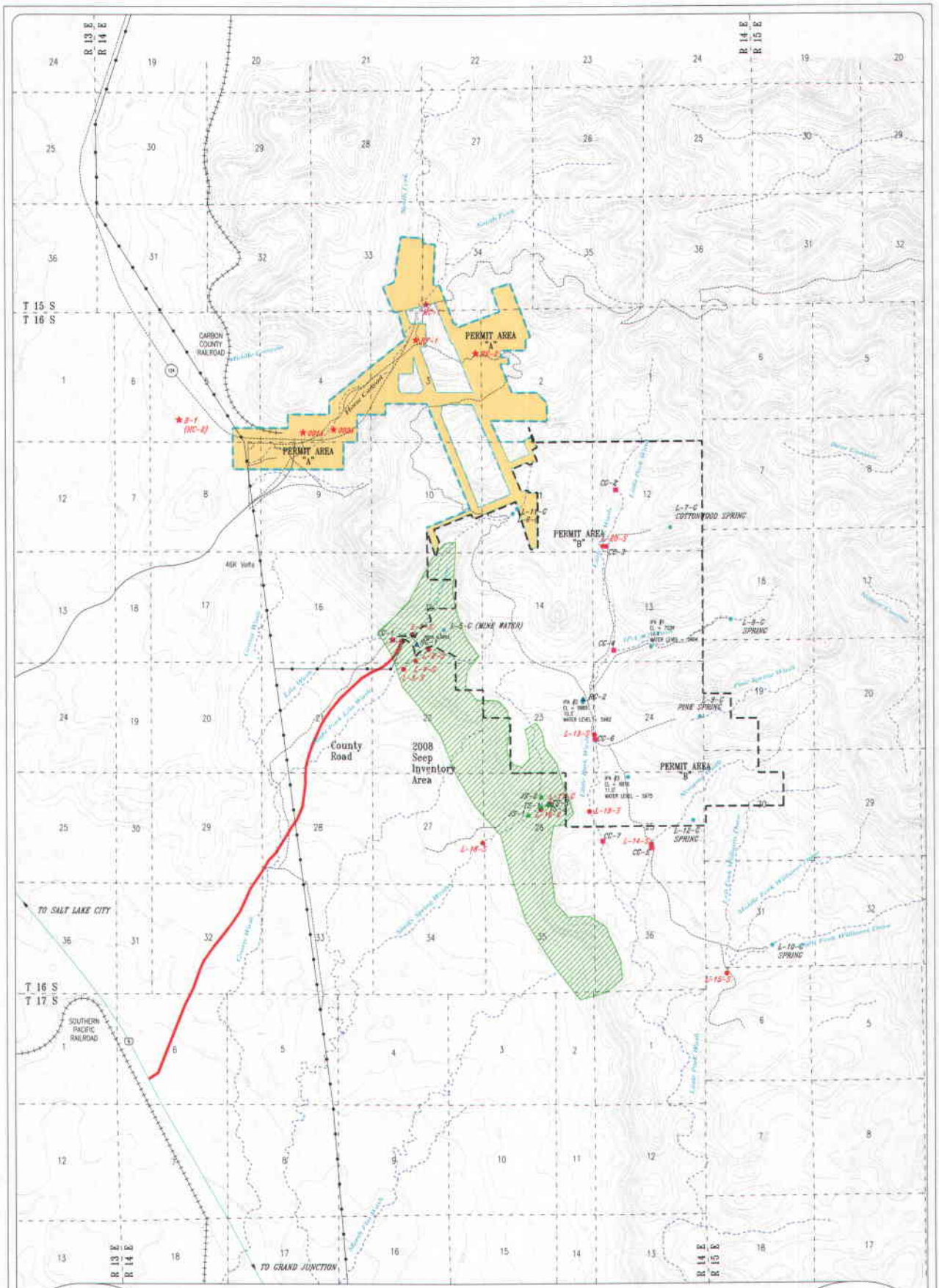
Plate 1 shows the location of the seep occurrences. Table 1 shows the coordinates and elevations of the seeps. Also, the table presents the flows and associated data.

As can be seen, the flows were extremely small and in three locations the rocks were damp with no flowing water. In the locations where flows were sufficient to collect a sample, the conductivity was greater than the meter could read and pH values were quite basic. Such water quality would not be suitable for wildlife. Few if any indications that wildlife had used these sources could be seen.

TABLE 1

Lila Canyon - Water Monitoring Coordinate Data

Site	Latitude	Longitude	Stateplane N (feet)	Stateplane E (feet)	Elevation (ft.)	# of satellites	Error margin (+/-)	Flow Rat	Cond.	Temp	pH
IPA #1	39° 25.514' N	110° 18.439' W	399946.05	2336903.63	7049	6	22				
IPA #2	39° 25.088' N	110° 19.144' W	397316.3	2333618.88	6872	6	17				
IPA #3	39° 24.488' N	110° 18.718' W	393701.03	2335672.92	6820	7	17				
L-01-S	39° 25.6457' N	110° 20.8662' W	400595.57	2325467.03	5826	8	19				
L-02-S	39° 25.5230' N	110° 20.7040' W	399860.709	2326240.081	5934	8	19				
L-07-G	39° 26.450' N	110° 18.223' W	405640.88	2337844.49	7354	5	19				
L-08-G	39° 25.717' N	110° 17.621' W	401229.84	2340737.86	7049	5	45				
L-09-G	39° 24.958' N	110° 17.952' W	396601.96	2339241.56	7036	6	18				
L-11-G	39° 26.618' N	110° 19.781' W	406563.58	2330498.28	7220	4	35				
L-12-G	39° 24.143' N	110° 18.038' W	391649.72	2338902.98	6762	6	29				
L-13-S	39° 24.831' N	110° 19.032' W	395763.35	2334166.82	6820	6	18				
L-14-S	39° 23.960' N	110° 18.472' W	390511.64	2336874	6678	8	19				
L-16-G	39° 24.2498' N	110° 19.5893' W	392201.033	2331589.099	5792	8	19				
L-17-G	39° 24.2957' N	110° 19.4968' W	392485.352	2332021.029	5896	8	19				
L-18-S	39° 23.9966' N	110° 20.1881' W	390627.335	2328789.29	5513	8	19				
L-19-S	39° 24.228' N	110° 19.094' W	392099.45	2333923.26	6700	5	18				
L-20-S	39° 26.314' N	110° 18.916' W	404771.98	2334593.76	7153	9	15				
RAIN GAUGES - APRIL 2008 & AUGUST 2008											
RG-1	39° 25.5620' N	110° 20.8216' W	400090.286	2325683.408	5946	8	19				
RG-2	39° 25.1101' N	110° 19.1383' W	397450.92	2333644.12	6875	8	19				
SPRING & SEEP - APRIL 2008											
JS-1	39° 24.2052' N	110° 19.7143' W	391922.606	2331004.009	5793	8	19	damp	-	-	-
JS-2	39° 24.3467' N	110° 19.5807' W	392789.721	2331621.879	5932	8	19	0.01	+4000	54.3	9.03
TS-1	39° 24.2667' N	110° 19.5851' W	392303.871	2331607.531	5873	8	19	0.01	+4000	40.2	8.68
TS-2	39° 24.2848' N	110° 19.5101' W	392418.37	2331959.268	6005	8	19	damp	-	-	-
TS-3	39° 24.2899' N	110° 19.5168' W	392448.911	2331927.311	5992	8	19	damp	-	-	-
CREST GAUGES - AUGUST 2008											
Lila CG1	39° 25.6006' N	110° 21.0658' W	400309.785	2324530.799	5739	8	19				
Lila CG2	39° 26.7540' N	110° 18.7754' W	407451.416	2335220.175	7303	8	19				
Lila CG3	39° 26.3110' N	110° 18.8839' W	404755.876	2334745.274	7233	8	19				
Lila CG4	39° 25.4918' N	110° 18.8207' W	399787.62	2335108.598	6968	8	19				
Lila CG5	39° 23.9398' N	110° 18.4462' W	390390.749	2336997.324	6675	8	19				
Lila CG6	39° 24.8083' N	110° 18.9742' W	395629.264	2334440.693	6809	8	19				
Lila CG7	39° 23.9969' N	110° 18.9549' W	390705.618	2334596.861	6656	8	19				


R 13 E
R 14 E
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PERMIT AREA "A"
PERMIT AREA "B"
CARBON COUNTY RAILROAD
SOUTHERN PACIFIC RAILROAD
TO SALT LAKE CITY
TO GRAND JUNCTION
County Road
2008 Seep Inventory Area
L-5-C (MINE WATER)
L-7-C COTTONWOOD SPRING
L-8-C SPRING
L-9-C PINE SPRING
L-10-C SPRING
L-12-C SPRING
46K Volts
LEGEND:
WATER MONITORING:
HORSE CANYON MONITORING
LILA CANYON SURFACE MONITORING
LILA CANYON GROUNDWATER MONITORING
LILA CANYON CREST GAUGE MONITORING
LILA CANYON SEEP LOCATIONS
LILA CANYON RAIN GAUGE LOCATIONS
REVISION DATE:
LILA CANYON MINE
WATER MONITORING LOCATIONS
MAY 1998
AS SHOWN
BLACKHAWK ENG.